

Student feedback on teaching-learning methodology and evaluation methods in pharmacology

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ABSTRACT

Background: Pharmacology as a medical subject undergoes constant update and thus is ever expanding. Periodic review of the teaching-learning tools along with the evaluation methods and then improvisation of the same to make the curriculum effective as well as student friendly can help in making the medical student grasp the difficult subject easily. The present study was undertaken to get the students' feedback regarding the various teaching methodologies used in the Department of Pharmacology and the evaluation techniques to assess them.

Methods: A prevalidated and anonymous questionnaire was given to the second professional MBBS students at the end of their session. The questionnaire had both closed ended and open ended questions. The data were compiled and evaluated as counts and percentages. Approval was taken from Institutional Ethics Committee.

Results: About 57.9% students found the subject useful and interesting and the most common topics of interest among the students were general pharmacology (29.5%), cardiovascular system (17.9%), and autonomic nervous system (15.8%). Interactive lectures, audio-visual aids with demonstrations and tutorials were considered the most interesting method of learning pharmacology (42.1%, 31.6%, and 31.6%, respectively). The majority of the students (61%) wanted clinical case studies to be incorporated in the routine teaching of pharmacology for better understanding and better correlation of drugs used in diseases. The best method of evaluation according to the students was a combination of written and viva exam (51.6%), followed by written class test only (33.7%), and tutorials (22.1%). The suggestions about improvement in pharmacology teaching which were highlighted by the students were inclusion of clinical case studies with drug management, incorporation of multiple choice questions, and computer simulations.

Conclusion: It is important to take regular feedbacks from the students to make the teaching more useful and interesting so that synchronization between teaching-learning, evaluation and assessment can be achieved for improved outcome.

Keywords: Evaluation, Feedback, Student, Teaching learning method

INTRODUCTION

Feedback is a frequent, ongoing review of strengths and areas to improve, with the goal of enhancing performance. Feedback is effective if given timely in a constructive manner with a positive attitude for improvisation. Medical teaching involves conceptual training along with the practical reinforcement of the theoretical knowledge with the aim of providing a better understanding of the subject. Pharmacology is an important branch of medical science which keeps on evolving and requires constant updating of knowledge. This leads to incorporation of various teaching-learning methodologies like didactic lectures,

use of audio-visual aids and videos, computer simulated animal experiments, prescription writing, etc. which are planned in a way so that the students become familiar with the drug nomenclature, their mechanisms, their adverse effects and most important the rational use of drugs for various diseases. The evaluation methods are also based on these teaching-learning tools. The curriculum that we follow needs to be assessed periodically as it highlights the strengths as well as points out the fallacies which are required to improve the medical teaching because we are raising the future health care providers of the society. Currently, student feedback represents the primary means used by most programs to assess their methodology.¹⁻³ The present

study was done to obtain the feedback from the students about the teaching-learning methodologies adopted by the Department of Pharmacology and the evaluation methods for the same. They were also asked to provide suggestions for any improvement, if required, in the current undergraduate training methodologies which can enhance understanding of pharmacology as well as its retention throughout their medical tenure.

METHODS

The study was conducted in 95 students of MBBS 2nd professional pharmacology students after obtaining permission from Institutional Ethics Committee. They were first briefed about the purpose of the study and then after giving the informed consent; the students filled a prevalidated and anonymous questionnaire which included both close ended and open ended questions regarding the teaching-learning tools and assessment methods in pharmacology department (Annexure I). The first five questions were based on a five-point Likert scale with 5 being strongly agree and 1 being strongly disagree. Furthermore, there was a section provided for suggestions for improvement in the current practice of teaching pharmacology. We took the help of different questionnaires while framing the questions and then suitably modified it according to our curriculum for the students.¹⁻³ The data collected were entered in a pre-structured format and the result analyzed by using counts, percentages, and frequency analysis.

RESULTS

The results of questions based on Likert scale is expressed in numbers and percentages (Table 1 and Figure 1). More than 50% of the students considered pharmacology as their favorite subject among the basic sciences and majority believed that a sound knowledge of pharmacology would help them in rational use of drugs in future. The students believe that clinically oriented and integrated pharmacology teaching would be better as they can study clinical cases with their drug management alongside and this would help in better retention of the subject.

The majority of the students (62.1%) were of the opinion that 1½ years is adequate for MBBS second professional duration while very few (6%) thought that this duration was inadequate and could be extended to 2 years. About 57.9% students found the subject useful and interesting while 42.1% said that though pharmacology is a useful subject, it is boring. The most common topics of interest among the students were general pharmacology (29.5%), cardiovascular system (17.9%), autonomic nervous system (15.8%), and central nervous system (14.7%) while the least favored was autacoids. According to the students, the best order to study pharmacology was general pharmacology followed by autonomic nervous system, cardiovascular system, central nervous system, endocrinology, autacoids, respiratory system, gastrointestinal system, and then chemotherapy. Standard pharmacology textbooks were observed to be the

Table 1: Students’ feedback on teaching methods in pharmacology.

| Questions | N (%) | | | | |
|---|-----------|-----------|-----------|-----------|---------|
| | SA | A | NS | D | SD |
| Pharmacology is my favorite basic science subject | 14 (14.7) | 40 (42.1) | 29 (30.5) | 11 (11.6) | 1 (1.1) |
| Studying pharmacology will help in rational use of drugs | 42 (44.2) | 47 (49.5) | 6 (6.3) | Nil | Nil |
| More emphasis should be on problem solving exercises | 24 (25.3) | 54 (56.8) | 13 (13.7) | 4 (4.2) | Nil |
| Horizontal integration of pharmacology with other clinical and para clinical subjects | 30 (31.6) | 61 (64.2) | 4 (4.2) | Nil | Nil |
| Clinically oriented pharmacology teaching | 44 (46.3) | 42 (44.2) | 5 (5.3) | 4 (4.2) | Nil |

SA: Strongly agree, A: Agree, NS: Not sure; D: Disagree; SD: Strongly disagree, N: Number

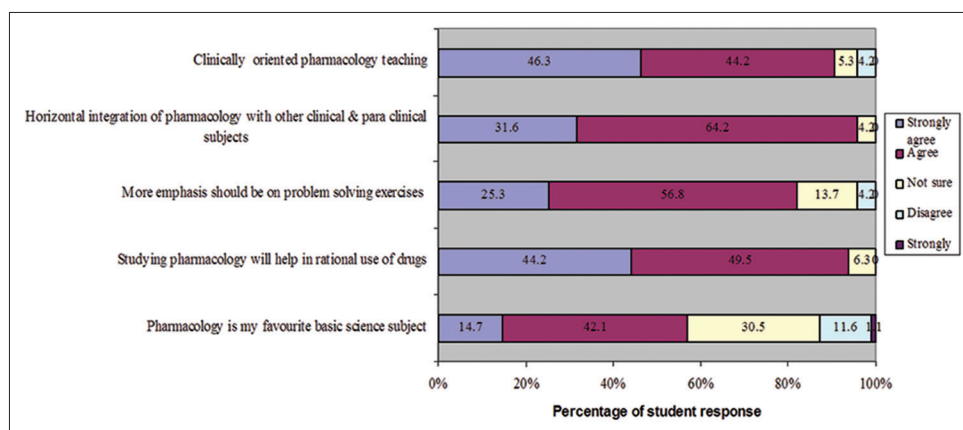


Figure 1: Students’ feedback on teaching methods in pharmacology.

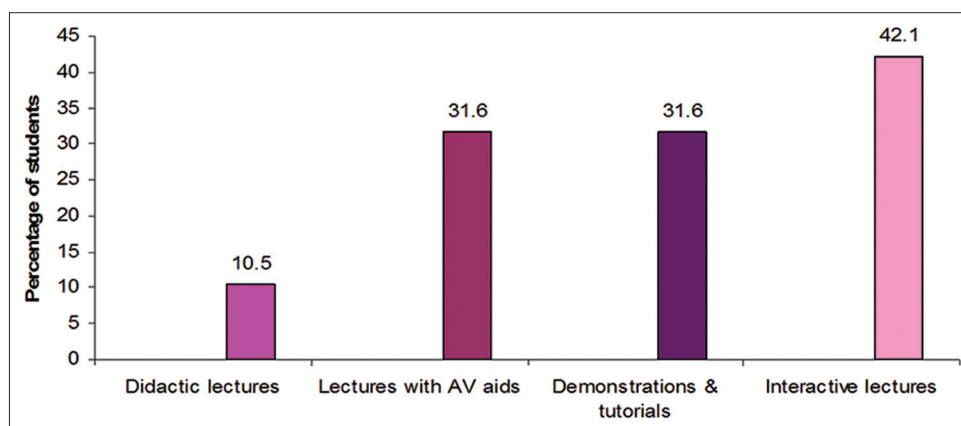


Figure 2: Students' preference for teaching methodologies in pharmacology.

Note: The total of percentages may not be 100 as students could choose multiple answers.

most useful (70.5%) resource for studying pharmacology while about 24.2% students each referred to teacher's notes or self-prepared notes while studying. The students pointed out that the main reason for studying pharmacology was due to regular tests and tutorials held in the department (43.2%) rather than to gain knowledge (14.7%) or due to interest in the subject (4.2%). Many students (40%) however studied only during the midterm or final exams. Interactive lectures, audio-visual aids with demonstrations and tutorials were considered the most interesting method of learning pharmacology (42.1%, 31.6%, and 31.6%, respectively) (Figure 2).

A vast majority of students (61%) opined that case based learning needs to be incorporated in pharmacology teaching along with group discussions (27.4%) and quiz (21%) to make learning more effective and long lasting. Prescription writing, drug interaction exercises, and clinical exercises were found most useful (51.6%, 49.5%, 44.2%, respectively) by the students for future practice. About 36.8% students felt that after MBBS 2nd professional, pharmacology orientation courses should be held regularly while 37.9% were in favor of discussing only recent advances in pharmacology. Few students (14.7%) preferred to have regular lectures of pharmacology even after second professional exams. Discussions at the end of class (51.6%), encouraging students to ask questions during lectures (26.3%) were the main ways in which one could enhance active student participation in the class as was evident from the feedback questionnaire. The majority of the students felt that there was personal interaction with them during their tenure to some extent (50.5%) while 21% said that there was definite personal interaction with them. About 11.6% students did not experience any personal interaction with the teachers.

The best method of evaluation according to the students was a combination of written and viva exam (51.6%), followed by written class test only (33.7%) and tutorials (22.1%) (Figure 3). There was just a slight variation in responses of

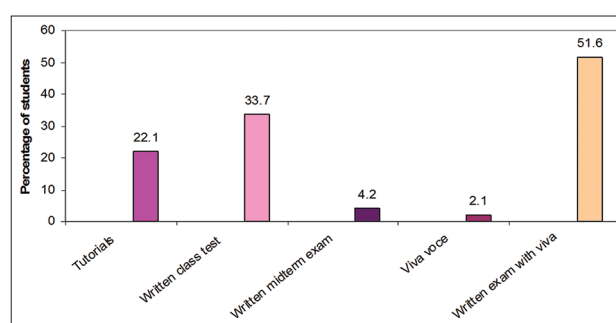


Figure 3: Most helpful evaluation methods in pharmacology according to students. Note: The total of percentages may not be 100 as students could choose multiple answers.

the students when answering about the feedback given to them by the teachers, as 28.4% felt that the feedback given was regular but without any helpful comments, 26.3% felt that the feedback was regular along with helpful comments while 23.1% felt that the feedback was irregularly given to them. About 12.6% students mentioned that they were never given any feedback. When asked about the qualities of a good pharmacology teacher, the students mentioned that he/she should be knowledgeable and could explain the topic in a simple and easy manner as pharmacology is a difficult subject. They also said that a teacher who interacts well during the class, who updates them about the recent advances, one who is friendly, helpful and encouraging, qualifies as a good facilitator according to them.

The few suggestions regarding improvement in pharmacology teaching which were highlighted from the questionnaire were inclusion of clinical case studies with drug management, effective but limited use of audio-visual aids with more emphasis on chalkboard teaching and interaction with the students. They also wanted incorporation of multiple choice questions (MCQs), and computer-assisted learning (CAL) with more frequent tests and class discussions after each chapter.

DISCUSSION

The knowledge of pharmacological principles and the ability to apply it in medical practice is important and failure to grasp the concepts during the early medical course can lead to irrational drug use in the patients later on. The importance of the subject is well-accepted by majority of the students who mentioned pharmacology as their favorite subject in the basic sciences and agreed that knowledge of pharmacology is essential for future practice. Other authors also have the same results and opinion.^{1,2,4} As the favorite topics of students' is general pharmacology, cardiovascular system, autonomic nervous system and central nervous system while the least favored was autacoids, respiratory system, gastrointestinal system and chemotherapy, more efforts are required to make the latter topics interesting for the students.² Interactive lectures with active two-way communication was the most preferred and interesting way of learning pharmacology. The involvement of students in the classes can be increased if they are asked to come prepared with the topic so that they can ask more questions which will not only enhance their understanding of the topic but also boost the teachers to come thoroughly prepared for the class.^{1,2,5} One of the study showed that students preferred handouts of the topic to be distributed beforehand so that they could read and come prepared in the class.⁶ Such practice led to enhanced bilateral communication during the lecture which facilitates the retention of the subject matter. Many studies support the fact that students want clinical case studies to be incorporated in routine pharmacology curriculum as is evident in our study also.^{1-4,7} This would improve conceptualization of the subject which will be helpful for them in their future medical career. Students feel that prescription writing, clinical exercises and drug interactions taught to them during practical pharmacology is very important as will enhance their clinical skill but by the time they reach internship, they tend to forget pharmacology and thus more orientation courses and updates on recent advances should be regularly conducted even after the second professional session. Han WH in 2006 also stated in his study that there should be some incorporation of clinical pharmacology in internship also to help the doctors write rational prescriptions.⁸ Regular tests, viva and tutorials help students learn pharmacology and retain the subject matter. Inclusion of MCQs as a part of written test was suggested by the students which would help them prepare for postgraduate examination.

CONCLUSION

Regular feedback about teaching-learning methodologies and assessment may help the teachers to make suitable changes in the conventional teaching accordingly which can enhance learning and improve outcome. Pharmacology being one of the most important subjects of medical sciences which contributes to all the other broad specialties and super-specialties is a vast subject, and the students find it difficult to grasp. Appropriate improvisation in teaching and evaluation methods can make the ever-expanding subject more interesting and relevant to their medical/clinical training.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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ANNEXURE 1

DEPARTMENT OF PHARMACOLOGY SGRDIMS&R, AMRITSAR

MBBS IInd Prof.
Student feedback form**Instructions:**

1. This is an anonymous feedback questionnaire. Please do not sign/write your name.
2. Please consider each of the following items and descriptors and tick the one you readily agree with.
3. You may tick off more than one answer to a question to the extent that it does not invalidate your response

| Questions | Response |
|---|-------------------|
| 1. Pharmacology is my favourite subject in the basic sciences | Strongly agree |
| 2. Studying pharmacology in MBBS IInd prof will help me in choosing drugs rationally in my future practice | Agree |
| 3. There should be more emphasis on problem solving exercises rather than on didactic lectures | Not sure |
| 4. I would like horizontal integration of pharmacology with other para-clinical and clinical subjects | Disagree |
| 5. Unless pharmacology is simultaneously learnt along with other clinical conditions, it would be difficult to correlate the drugs with the disease | Strongly disagree |
| 6. According to you how much time would be adequate for MBBS IInd Prof teaching? (a) 1 year (b) 1½ year (c) 2 year | |
| 7. What is your opinion regarding pharmacology? (a) Useless and boring (b) Useful but boring (c) Useful and interesting (d) Any other (specify) | |
| 8. How do you rate pharmacology as compared to other subjects of IInd Prof? (a) Useless, not important (b) Average same as others (c) Above all in subjects (d) Other (specify) | |
| 9. Rearrange the following topic as per your interest/choice <ul style="list-style-type: none"> • General pharmacology • ANS • CVS & diuretics • CNS • Endocrinology • Autocoids • Respiratory system • GIT • Chemotherapy | |

(Contd...)

| Questions | Response |
|--|----------|
| 10. What is the best order to study the following topics of pharmacology? <ul style="list-style-type: none"> • General pharmacology • ANS • CVS & diuretics • CNS • Endocrinology • Autocoids • Respiratory system • GIT • Chemotherapy | |
| 11. Which one of the following resources was most helpful in studying pharmacology? <ul style="list-style-type: none"> (a) Standard text books (b) Handy books (c) Teacher's notes (d) Self-prepared notes (e) Any other (specify) | |
| 12. What is your pattern of study in pharmacology? <ul style="list-style-type: none"> (a) Regular because of interest (b) Regular because of tests & tutorials (c) Regular because want to gain knowledge (d) Only during tests & exams | |
| 13. How did you learn pharmacology? <ul style="list-style-type: none"> (a) By cramming (b) By understanding (c) By combination (d) Cannot learn | |
| 14. Which of the following method did you find most interesting in learning pharmacology? <ul style="list-style-type: none"> (a) Didactic lectures (b) Audiovisual aided lectures (c) Demonstrations & tutorials (d) Interactive lectures | |
| 15. Would you like to add any of the following method as a part of teaching to make it more interesting & useful? <ul style="list-style-type: none"> (a) Group discussions (b) Student seminar (c) Case based learning (d) Quiz | |
| 16. Which part of pharmacology practical is most interesting & useful? <ul style="list-style-type: none"> (a) Prescription writing (b) Clinical exercises (c) Drug interaction (d) Experimental graphs (e) Pharmacy exercises | |
| 17. Which part do you think is most useful in future? <ul style="list-style-type: none"> (a) Prescription writing (b) Clinical exercises (c) Drug interaction (d) Experimental graphs (e) Pharmacy exercises | |
| 18. Do you think that there is need to teach Pharmacology again after MBBS IInd Prof? <ul style="list-style-type: none"> (a) Only recent advances (b) Orientation course (c) No, enough of pharmacology | |

(Contd...)

| Questions | Response |
|--|----------|
| 19. Which of the following methods do you think are to be used, to encourage student participation in class? (a) Encouraged questions (b) Discussion in class (c) Discussion outside class (d) Discussion individually | |
| 20. Was there any opportunity for personal interaction? (a) Yes (b) To some extent (c) Cannot say (d) Nil | |
| 21. According to you what should be the quality of good pharmacology teacher? | |
| 22. Which evaluation method helps you most in preparing you for your university examinations? (a) Tutorials (b) Written class tests (c) Written midterm exams (d) Viva voce (e) Combination of written & viva voce | |
| 23. How was the feedback on your performance, provided to you during the class? (a) Regularly with helpful comments (b) Regularly without comments (c) Irregularly (d) No feedback is given | |
| 24. What changes should be done in teaching methodology and evaluation system in this subject so as to make it more interesting/understandable and practicable? Write few suggestions | |